strong inhibitory action of the perivisceral fluid upon fertilization should occur at the breeding season. As to the action of the dermal secretion there seems to be hardly any biological significance, since under natural conditions neither egg nor sperm encounters such a high concentration of the secretion as suffices to inhibit fertilization.

Having been engaged in other work, I could not carry out this series of experiments more fully and accurately. But, as I shall not have further opportunity of dealing with this Atlantic species, I have here ventured to communicate this incomplete note, simply with the hope that it may lead to further research on the seasonal changes in the effects of the "dermal secretion" and the "perivisceral fluid" of the sea-urchin upon the fertilizability of the egg.

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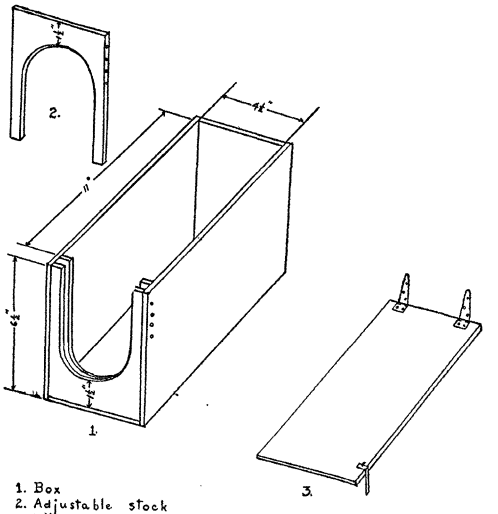
Simple Method of Bleeding Rabbits

The simplest method of obtaining rabbit's blood, when more than a few drops are necessary, is that of bleeding from the median artery of the ear. This vessel stands out prominently and is easy of entrance, if the animal is full grown. As much blood can be taken by this method as directly from the heart, and either a syringe may be used, or a cannula only, with a tube to receive the fluid.

The chief advantage of bleeding from this vessel is that small quantities of blood (3 c.c. to 5 c.c.) may be obtained at frequent intervals (daily, if necessary), each point of entry being successively nearer the base of the ear. Ten or more cubic centimeters may be obtained just as easily.

It is occasionally found that even when the needle seems to be safely within the artery, a good flow does not follow. This is sometimes caused by a plug of skin blocking the passage of the blood, but more often it will be found that there are two smaller arteries in place of the single larger one, with a consequently smaller flow in each. Animals which have the single vessel should for this reason be selected. In general, the larger the vessel, the greater is the ease of obtaining blood. A sharp needle is essential, because, due to the thickness and toughness of the arterial



Cage for Bleeding Rabbits

walls, a somewhat dull point will almost invariably pass around the vessel rather than into it. A small needle is best because of the smaller puncture it makes, and the consequently greater ease of stopping the blood after withdrawal. A 21- to 23-gauge needle has been found by the writer to be most satisfactory.

Little trouble is experienced in stopping the flow upon withdrawal of the cannula, usually no more than following withdrawal from a vein. Potassium alum will very quickly stop the bleeding where it will not do so naturally.

The marginal ear vein may also be used in the same way, though it is difficult to obtain more than a cubic centimeter or two therefrom on account of the lower pressure and decreased flow in the veins. The needle must, of course, in all cases be inserted opposite to the direction of the blood flow.

White rabbits, or rabbits with white ears, are much the most suitable sort for this work for obvious reasons. Injections into and bleedings from ear vessels are greatly facilitated by placing an electric light below the ear in such a position as to make the ear translucent. If alcohol is applied on a bit of ab-

sorbent cotton, the double purpose is served of stimulation of the vessels, causing them to dilate, and of plastering down the hair upon the skin, making the veins and arteries more visible. When the needle is withdrawn the alcohol must be well wiped off before the wound will close. Sometimes when an attempt to enter the median artery is for any reason unsuccessful, the blood will be seen to leave the vessel entirely and remain so for a considerable time, due to contraction of the arterial wall which was probably pricked by the needle. Vigorous rubbing, however, will bring the normal circulation back.

Shaving or sterilizing the ear is unnecessary when it is not desired to preserve the blood for more than immediate use. Several hundred injections and bleedings during the past year or two have shown no ill effects whatever. Rabbits apparently rival avian forms in their resistance to infection. Numerous subcutaneous and intraperitoneal injections without shaving or sterilizing the body surface have not shown a single infection.

A very useful sort of cage, designed by Mr. George H. Bishop for use in this laboratory, makes it simple for one to perform injections and bleedings alone. A box about eleven inches long, four and a half wide, and six and a half deep (inside measurements), has a stock at the front end, the upper half of which operates in a slot, and which may be fastened so as to allow an opening of any desired size, through which the animal's head and neck protrude. A hinged top prevents kicking up behind. Rabbits take very quietly to this temporary confinement once they are placed inside the box, and are not then able to jump and misdirect the needle so easily as when one is attempting to hold the animal. This cage is here illustrated.

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ADSORPTION BY SOIL COLLOIDS

(PRELIMINARY PAPER)

FOR some time we have been working on the adsorption of soil colloids. We believed that this problem could best be solved by preparing these soil colloids separately in the purest possible condition, and then trying each colloid with the nine following respective salts: potassium nitrate, potassium sulphate, potassium acid phosphate, calcium nitrate, calcium sulphate, calcium acid phosphate, magnesium nitrate, magnesium sulphate, magnesium acid phosphate.

The individual salts have been tried on silica, aluminium, and iron gels, and the humus is now in the process of preparation. We have worked on the adsorption of each ion separately. A few results are given to show the trend of the work.

ADSORPTION BY SILICA GEL

Conc.	Mg. of Ca Adsorbed per Gram of Gel	Mg. of PO_4 Adsorbed per Gram of Gel
N/10	— 0.013	0.358
N/20	— 0.034	0.114
N/40	0.032	0.037
N/400	0.023	0.045

ADSORPTION BY IRON GEL

Conc.	Mg. of Mg. Adsorbed per Gram of Gel	Mg. of SO_4 Adsorbed per Gram of Gel
N	9.7	31.9
N/5	8.0	30.7
N/10	5.7	28.3
N/20	4.3	23.2

ADSORPTION OF ALUMINIUM GEL

Conc.	Mg. of P_2O_5 Adsorbed per Gram of Gel in 1 Week	2 Weeks	4 Weeks	6 Weeks
N/10	261.0	291.5	338.0	385.5
N/20	221.5	256.7	281.0	317.0
N/40	186.3	191.1	197.3	210.5

There was less than the equivalent amount of calcium adsorbed at the various concentrations.

ADSORPTION OF SILICA GEL AT VARIOUS P_H VALUES

P_h Value	Mg. of K Adsorbed per Gram of Gel
3.888	— 0.68
6.086	1.74
7.692	6.56
9.501	9.62

We have also varied hydrogen ion concentration and followed the adsorption curves for the respective ions with the idea of show-